XXXII.—*Contributions towards a General History of the Marine Polyzoa.* By the Rev. Thomas Hincks, B.A., F.R.S.

[Concluded from ser. 5, vol. xv. p. 257.]

[Plates VI. & VII.]

XV. SOUTH-AFRICAN AND OTHER POLYZOA.

The present paper concludes the first series of the "Contributions" so far as the descriptive portion is concerned. A second may follow after a time if it should be found that there is a sufficient amount of interesting material on hand to make it desirable.

On referring to the first paper of the present series (which dates as far back as July 1880) I find that the programme proposed in it has only been partially realized. One important element of it has been almost entirely omitted—the record of the known species belonging to the various genera that have come under notice. It was soon evident that this portion of the plan would involve an expenditure of time and labour for which I was not prepared, and it was therefore abandoned *.

Of course the description of new forms (or forms supposed to be new) has occupied a large portion of the work. About a hundred species, previously undescribed, have been fully characterized and figured.

It may be interesting to contrast the style of diagnosis which is now generally adopted with that which satisfied the older writers and which survives in Busk's earlier works. In the latter brevity seems to have been the thing chiefly aimed at; two or three leading features were considered sufficient for identification, and there was no attempt at anything like a complete portraiture of the form. The present method is to make the diagnosis as full as possible (a very important point in the case of such a tribe as the Polyzoa), not merely to indicate two or three distinctive marks, but to present in detail the zoœcial and colonial characters. There can be little doubt, I think, that this style of diagnosis is most in

* The want which I had hoped in some measure to supply, though in an imperfect and partial way, has been satisfactorily met in the valuable work lately published by Miss E. C. Jelly, 'A Synonymic Catalogue of the Recent Marine Bryozoa,' which contains a list of the names of all published species, combined with a full synonymy.

harmony with the altered views of the nature and origin of species which now prevail, whilst at the same time it makes identification both surer and easier. Science, in my judgment, would be the gainer if there were more rigour in dealing with meagre and insufficient descriptions of specific forms.

Another important change in systematic method is indicated by the increased attention which is paid to varietal modifications of the type-form and also to the lesser variations amongst the structural elements, in all of which "we see nature still at work," preparing for the introduction of new forms.

A considerable number of new varieties of recognized species are described in the present series of papers.

In addition to the merely descriptive matter, a record of the geographical range has been given as far as possible, and many systematic and morphological questions have been discussed.

In an Appendix I shall correct any errors or omissions that may have come to my knowledge and add a few notes on special points.

Suborder Cheilostomata.

Family **Flustridæ**.

Flustra, Linnæus.

Flustra spinuligera, sp. n.
(Pl. VI. figs. 1, 1 *a*, 1 *b*, 1 *c*.)

Zoarium of a light brown colour, divided into large segments, widening upwards and irregularly lobate*. *Zoœcia* alternate, disposed in lines, elongate, rounded at the top and slightly enlarged, narrowed towards the base; margin somewhat thick, bearing on each side a continuous line of rather short and stout spines; area closed in by a membranous wall, a little beneath the membrane, the sides of the cell traversed by a line of minute and pointed denticles. *Oœcium* immersed, rounded, surface smooth, a bar composed of two modified spines across the front. *Avicularia* distributed over the zoarium, occupying a distinct area, which ranges in a line with the cells, placed obliquely, rounded at the base, the beak much produced and carried up between the walls of the neighbouring cells above it; mandible broad and triangular below, running out above into a slender spinous process of considerable length.

* The habit is very similar to that of *F. foliacea*.

Locality. Port Elizabeth, South Africa (*Miss Jelly*).

In some respects the present species resembles *Flustra denticulata*, var. *inermis*, Busk, of which there is a figure both in the 'British Museum Catalogue'* and the 'Challenger' Report†. But the differences between the two are sufficiently important to warrant their separation. The habit of the zoarium, which in Busk's species is composed of simple "linear branches," is strikingly unlike that of the present form. The zoœcia in the var. *inermis* are entirely destitute of spines, or are merely furnished with a single "small upturned spine" on each side of the mouth, while the avicularia of the two species differ markedly in shape (Pl. VI. figs. 1 *c*, *d*). The internal denticles are present in both.

It may be a question, I think, whether the variety *inermis* is not specifically distinct from *F. denticulata*.

Ortmann, in his interesting Report on 'Japanese Bryozoa'‡, has described and figured a species (*Carbasea rhizophora*) belonging to the section of the genus in which the zoœcia are disposed on one side only of the zoarium (*Carbasea* of authors), which in some points bears a notable resemblance to the present form. In shape and arrangement the cells of the two forms are identical, but there are no lateral spines nor is any mention made of internal denticles; the *oœcia* present the same characters, being in both cases furnished with the bar across the front; the same may be said of the avicularia—they offer, so far as I can see, no points of difference. The zoarium, however, besides having the cells on one side only, is decumbent and attached by tubular fibres given off from the dorsal surface. The resemblances are certainly remarkable, and the two forms must be regarded as very nearly related.

In the present species the side-walls of each zoœcium are furnished with a number of circular pores (communication-pores) which form a line extending from one end of the cell to the other, a little below the internal denticles. A similar structure has been noticed by Busk in *F. denticulata*, var. *inermis*; but he states that it is only met with in the marginal zoœcia.

Abnormal cells of peculiar form and destitute of orifice occur occasionally (Pl. VI. fig. 1 *b*).

* B. M. Cat. vol. i. p. 49, pl. xlix. figs. 3, 4.

† 'Challenger' Report, part i. p. 53, pl. xxxii. fig. 2.

‡ "Die Japanische Bryozoenfauna," von Dr. A. Ortmann, Archiv f. Naturgeschichte, Jahrg. 50, i. Bd., 1 Heft (1890).

Flustra nobilis, sp. n. (Pl. VI. figs. 5.)

Zoarium foliaceous, of a dark brown colour, margin slightly lobate, attached by a dense mass of delicate fibres, which originate on the lower series of zoœcia, and are given off in pairs (one on each side) or singly from the oral extremity of the cell. *Zoœcia* on one surface only, quincuncial, of large size, elongate, wide above, narrowing downwards (subpyriform), each one overlapping more or less the zoœcium immediately above it; margin well raised, bearing a continuous line of bifid spines along the sides, at the summit four short spines, the two central ones usually larger than the rest, area occupying the whole front surface and closed in by a very stout, shining membrane; orifice ample, placed at the top of the area and extending from side to side, arched above, the lower margin straight, breadth much exceeding the height, operculum convex, with a thickened rim around the top and sides. *Avicularia* borne on the dorsal surface of the zoœcia at the upper extremity (where it overlaps the neighbouring cell), placed one on each side, erect and free, membranaceous, tumid above, and tapering downwards to the point of attachment, on the summit a semicircular mandible (Pl. VI. fig. 5 *b*). *Oœcium* (?).

Loc. Port Elizabeth, South Africa (*Miss Jelly*).

This is a handsome species and exhibits some interesting peculiarities. The zoœcia are of unusual size, and, where furnished with the forked lateral spines, present a very picturesque appearance. The spine is composed of a short upright piece, from the base of which springs a tall slender fork, which bends inwards over the area; the latter is frequently broken off, and the margin of the cell is occupied by a line of denticles.

The membranous covering of the area is remarkable for its stoutness and its shining surface. The operculum marks an advance on the small membranous lid which usually closes the orifice in this family. It is of large size, filling in the upper portion of the area, and is strengthened by a well-marked rim round the top and sides. Below it is continuous with the membranous wall, and its limit is marked by a mere line. It is in some measure a transitional form between the simpler structure and the isolated and hinged operculum of the Flustrine genus *Euthyris* and the higher Cheilostomata. The avicularium of *Flustra nobilis* is of quite a different type from that which prevails in the genus to which it is referred. The ordinary Flustrine avicularium is very slightly specialized; the mandibular apparatus is commonly placed

on a zoœcial area of reduced size, in a line with the cells, and very clearly betrays its relationship to the ordinary orifice. But in the present case the structure has attained a very considerable degree of specialization; it is erect and free, attached by its base to the zoarium and bearing the mandible at the opposite pole. *Flustra nobilis* is clearly a species which has departed to some extent from the ordinary Flustrine type.

Family **Membraniporidæ**.

Membranipora, De Blainville.

Membranipora eburnea, sp. n. (Pl. VII. fig. 5.)

Zoarium incrusting. *Zoœcia* quincuncial, crowded, porcellaneous, with a white and glossy surface, pyriform, much produced below, the lower half of the area (which occupies the whole front and has a membranous covering) roofed in by an extension of the cell-wall, which slopes rather steeply upwards and is continuous above with the elevated margin surrounding the upper portion of the area, the margin furnished with stout, pointed, calcareous processes, which bend slightly inward; two or three are also commonly present on the wall which closes the cell below; orifice small, semicircular, placed at the very top of the area. *Oœcium* (?).

Loc. ? Queensland (*Miss Jelly*).

Family **Myriozoidæ** (part), Smitt.

Schizoporella, Hincks.

Schizoporella concinna, sp. n. (Pl. VI. figs. 2.)

Zoarium erect, cup-shaped. *Zoœcia* on one surface only, quincuncial, of large size, subquadrangular or ovate, somewhat depressed, separated by thin raised lines, the sutures shallow, surface silvery, thickly covered with round perforations; orifice ample, much broader than high, arched above, the sides straightish, very slightly constricted below by the articular processes, lower margin straight, thin, with a rather shallow central sinus, rounded below, the opening, when perfect, contracted by a small denticular projection on each side; peristome slightly raised, operculum membranaceous; a ridge-like elevation of the zoœcial wall inclosing the orifice below; on each side of the latter, a little below the top, a small, slightly raised *avicularium* with rounded mandible (Pl. VI. fig. 2 *a*); occasionally a minute avicularium close to the sinus, placed transversely. *Oœcium* (?).

Loc. Port Denison, Queensland (*Miss Jelly*).

I have only had the opportunity of examining a single specimen of this fine species, and am therefore unable to give a complete account of the habit of growth, which may probably vary considerably.

The oral sinus is somewhat variable in shape and is often widely open above; but in what seems to be the perfect state it is as described. There is also some diversity in the form of the zoœcia, those on the growing margin being often obovate or ovate, while those in the interior of the colony are more accurately characterized as quadrangular or subquadrangular.

Many of the cells also are narrow and greatly elongated.

Schizoporella bimunita, sp. n. (Pl. VI. figs. 3.)

Zoarium erect, bilaminate. *Zoœcia* on both sides, lozenge-shaped, surrounded by raised lines, perforated round the margin *, the surface, when slightly calcified, rather depressed, covered with minute perforations, often nodulated; as calcification proceeds, irregular, raised, sometimes covered with low papillæ, sometimes smooth and dense, with scattered punctures; orifice elongate-oval, the sides curving outward very slightly, lower margin in great part occupied by a deep† sinus, widest above and narrowing gradually and slightly downwards, peristome not elevated; on each side of the cell (or sometimes on one side only) an elongate pointed avicularium, originating about the middle and stretching upwards alongside the orifice; scattered amongst the ordinary zoœcia, and often forming small groups, cells (? oœcial) having the orifice suborbicular, with a shallow sinus, wide above, narrowing slightly and rounded below (Pl. VII. fig. 3 *a*); in other respects resembling the zoœcia.

Hab. Stems of Hydroida.

Loc. Port Elizabeth, South Africa (*Miss Jelly*).

I am unable to give much account of the form of the zoarium and the mode of growth. The largest specimen which I have examined measures rather more than a quarter of an inch across and forms a compressed bilaminate expansion, which is attached to the stem of a Sertularian. The very regular shape of the zoœcia, their division into two classes, each with its characteristic orifice, and the definite arrangement of the two large avicularia which, as it were,

* The marginal perforations are frequently obliterated by the calcification.

† Often more than half as long as the upper part of the orifice.

guard the cells on each side, are the stable and distinctive characters. There is much variability in the superficial aspect, dependent on the amount of calcification, and different portions of the same colony exhibit a striking diversity of appearance. There is a great tendency to the formation of nodules and papillary processes over the surface, and in some states the numerous perforations are a feature.

In the corner of the orifice below, a little behind the sinus, are two rather large and prominent calcareous processes on which the opercular hinge works.

Schizoporella inconspicua, sp. n. (Pl. VII. fig. 3.)

Zoarium incrusting. *Zoœcia* ovate, quincuncial, perforated round the margin, gibbous, the front wall sloping up from the margin to the centre, on the highest point, immediately *below* the orifice, an umbo bearing a small *avicularium*, with rounded mandible, replaced in many of the cells by a broad spatulate *avicularium* with a large median aperture, the lower margin of which has a notch in the centre, whilst a prominent denticle projects from the middle of the upper margin; surface nodulated and thickly punctured, sometimes areolated; orifice orbicular or suborbicular *, with a wide, shallow, rounded or bluntly pointed sinus below, the articular denticles placed one on each side at the entrance of the sinus; the cell-wall elevated round the orifice. *Oœcium* large, covering nearly half the cell above it, of considerable width, much broader than high, rounded above, the front surface flattened, shining, thickly covered with minute perforations, surrounded by a smooth border; oral arch low and wide.

Loc. Port Elizabeth, South Africa (*Miss Jelly*).

As calcification proceeds the gibbous character of the zoœcia disappears; but it is very apparent in the normal cells towards the margin of the colony. In the central region the orifice is deeply sunk, the walls thicken, the oœcia are submersed, and much of the characteristic aspect of the species is lost. The structure of the avicularia offers some peculiarities which may be available as diagnostic characters. The orifice *with* the sinus is pyriform, but the portion above the sinus, which is covered by the movable lid or true operculum, is more or less orbicular. The hinge is placed at the bottom of it between the articular processes, which cause a slight constriction and mark the commencement of the sinus. It forms a well-marked boundary-line between the true operculum and the extension of it which closes in the sinus.

* Rather rudely orbicular, with many slight variations.

Schizoporella spectabilis, sp. n. (Pl. VII. figs. 1.)

Zoarium incrusting. *Zoœcia* disposed in transverse rows, large, irregularly ovate, sometimes narrow, sometimes of considerable width, occasionally enlarged above, prolonged and narrowing downward and truncate at the base, convex, inclosed by strongly-marked boundary-lines, the front wall much elevated towards the orifice, and sloping rather abruptly downwards towards the bottom of the cell, of a light brownish colour, the surface smooth and shining and thickly covered with small white papillæ; orifice depressed, sloping towards the top of the cell, orbicular or suborbicular, with a somewhat lozenge-shaped sinus below, sharply pointed at the lower extremity, with a bend outward on each side, the opening slightly contracted by two denticular projections. Operculum of a dark horn-colour, terminating below in a short spike-like process, which passes within the sinus. Immediately below the orifice on each side of the sinus a large pyriform body, decumbent and adnate, attached by a short stem-like prolongation to the raised line which bounds the cell, near the upper end of one of them an avicularium facing towards the orifice, with pointed mandible. Other bodies of a similar character and in various stages of development occur on the cells, all of them originating at various points on the boundary-line. *Oœcium* of large size, elongate, obovate, wide above and narrowing towards the oral extremity, oral arch lofty, closed by a dark-coloured operculum, surface reticulate.

Loc. Stewart Island, New Zealand.

This very interesting species, so far as the character of the orifice is concerned, might probably be referred to the *Gemellipora* of Smitt *, as limited by Busk †, if that genus could be accepted as well founded. But the slight peculiarity in the shape of the sinus can hardly be accounted a sufficient basis for a generic group. We are hardly in a position at present to interpret fully the curious bodies which bud from the raised line by which the zoœcia are surrounded. They are evidently not mere accretions of calcareous matter. Their constant form and position and the indications of definite structure which they present might naturally lead us to assign them zooidal rank; but we have no clue as yet to their morphological significance. All that we can say of them with certainty is that they are outgrowths from the zoœcial wall; of their function we know nothing, but their number shows that they must be serviceable in some way to the colony. They are all of

* Smitt, 'Floridan Bryozoa,' p. 37.

† Busk, 'Challenger' Report, pt. i. p. 176.

much the same shape, pyriform, with (in most cases) a stem-like prolongation below, and are wholly adnate. A smooth and solid casing envelops the lower portion; but in the earlier stages it is wanting above, and a mass of calcareous matter is visible, filling the interior. In more advanced stages the external envelope involves the whole structure; but the form of the original opening is in most cases indicated by a tract of feeble calcification. Two of these bodies are usually present immediately below the sinus, and they commonly join so as to form a prominent ridge across the front wall. One of them involves in a greater or less degree and partially conceals the suboral avicularium.

Schizoporella scabra, sp. n. (Pl. VI. fig. 4.)

Zoarium incrusting. *Zoœcia* quincuncially disposed, variable, commonly hexagonal, occasionally rhomboid or ovate, with raised boundary-lines inconspicuous in highly calcified states, young cells depressed, punctured, in mature cells the front wall much elevated towards the centre, highly calcified, the surface reticulate with nodular prominences, the punctures deeply sunk, a line of closely-set perforations round the margin, very conspicuous in the younger cells; orifice somewhat pyriform, the portion above the articular processes and hinge broad, the upper margin slightly arched, the sides tending somewhat inwards; below the hinge, where there is a slight constriction, a wide sinus, narrowing downwards and rounded below; hinge marked by a very distinct line, which curves upwards slightly, crossing the operculum almost immediately above the sinus; below the orifice a very prominent umbo, bearing on its inner surface a rather large *avicularium*, with broad, rounded mandible; peristome not raised. *Oœcium* small, shallow, depressed, wide in proportion to its height, rounded above, surface smooth and glassy, oral opening extremely narrow.

Hab. Forms white masses on the stems of Hydroida.

Loc. Port Elizabeth, South Africa (*Miss Jelly*).

The appearance of the zoarium in this species is highly characteristic. In its mature condition the divisions between the zoœcia are slightly marked; a thick calcareous covering overlies the primitive wall, the surface is reticulate, and covered by a multitude of small nodular processes. The avicularian umbo is hardly distinguishable, and both the orifice and the punctures are deeply sunk in the calcareous crust.

The form of the orifice can hardly be determined accurately

except by examining the younger cells. In few species is the line of separation between the two portions of the operculum, the movable lid and the fixed plate which closes the sinus more strongly marked. The latter is thick and prominent.

The oœcium is remarkable for its small size and its very slight elevation. The surface is glassy and entire. In the one or two examples which I have seen there is an appearance of immaturity.

Schizoporella pectinata, Busk, sp., form *Africana*, nov.
(Pl. VI. fig. 6.)

Zoarium erect, bilaminate, compressed, divided into wedge-shaped segments, with lobate margin. *Zoœcia* pyriform, small, convex, divided by distinct sutures, disposed obliquely in lines, front wall thickly covered with small punctures, in the older cells more or less obliterated; a line of rather larger perforations round the margin, frequently a smooth polished tubercle towards the lower part of the cell and an *avicularium* in the same region, the adult cells surrounded by a thickened border; primary orifice arched above, with a wide sinus below, tapering off to a rounded point, peristome raised; secondary orifice elliptical or semicircular, lower margin straight, within it a small pectinated ridge, at a short distance below it a roundish opening, formed by a bridge-like structure, which crosses the orifice (between the suboral avicularia) and shuts off the lower portion of it; on each side immediately below the orifice a raised *avicularium*, with pointed mandible; groups of larger cells (oœcial) principally along the margin of the zoarium, very prominent and massive, with the orifice much elongated transversely and very narrow between the upper and lower margins; large avicularian cells (replacing zoœcia) with pointed mandible, apex incurved, in lines along the outer edge of the zoarium.

Hab. Attached to the stems of Hydroida.

Loc. Port Elizabeth, South Africa (*Miss Jelly*); off Cape York, in 8 fathoms, coral-mud (*Busk*, 'Challenger' Rep.).

I refer the South-African form to Busk's species with some doubt. The figure of *Adeonella pectinata* in the 'Challenger' Report differs not a little from the present form. The "wide punctures" on the front wall which, as represented, are few in number, contrast strongly with the numerous minute punctures which cover it in the South-African species. The shape of the cells too differs, and the total absence of the suboral avicularia on the group of zoœcia figured by Busk, marks a still wider departure from the

characteristic facies of the latter. In the specimens from Port Elizabeth which I have examined, these avicularia, which are elevated and very constant in position, are generally present; their absence is quite exceptional and rare. As, however, Busk mentions that they occur on some of the oœcial cells we must not attach too much weight to their absence from the zoœcia in the single specimen on which the 'Challenger' diagnosis is founded.

But there are other differences between the two forms which are more significant. In the oœcial cells of Busk's species the "pore" is said to be "reniform and placed low down on the front," and the latter character is again referred to as "an exceptional feature." Nothing of the kind is to be met with in the South-African form. The oœcial cells are distinguished by their size and more massive character and by the shape and size of the orifice; in all other particulars they agree with the zoœcia. The suboral opening occupies the same position as in the ordinary cells, immediately below the bridge, and it is roundish and not reniform. It is difficult at first sight to understand how the "pore" *could* be placed "low down on the front of the cell;" but supposing it to be so, we have an important difference between the 'Challenger' and the African forms *. There is no figure of the oœcial cell in the 'Challenger' Report, nor does it contain any reference to the primary aperture.

On the whole, and taking into account the general similarity of most of the leading characters and the presence in both of the minute peculiarity, the pectinate ridge or "denticle," it will be better to refer the present variety to Busk's species, of which it will rank as a form—*Africana*.

I have placed this species *provisionally* in the genus *Schizoporella*.

The genus *Adeonella*, as constituted by Busk, is indistinguishable from *Adeona*, as indeed he virtually admits †. The whole group requires further investigation.

The present species bears a close resemblance in many of the leading characters to the *Eschara Pallasii*, Heller, which I have referred to the genus *Schizoporella* on account of the marked sinus on the lower margin of the orifice ‡. But oœcial

* In his interesting observations on *Adeonella*, in his 'Supplementary Report on the 'Challenger' Polyzoa,' Waters states that the "pore" "is placed so low down in *Adeonella Atlantica* that from an external examination it would be supposed that it opened into the zoœcial cavity" (p. 33).

† "As regards the general zoœcial characters there is no difference whatever between *Adeona* and *Adeonella*" (Busk, 'Challenger' Report, part i. p. 183).

‡ "Polyzoa of the Adriatic," 'Annals' for March 1886.

cells and the large marginal avicularium have not been detected in this form either by Heller or myself.

Family **Escharidæ** (part), Smitt.

LEPRALIA, Johnston (part).

Lepralia ocellata, sp. n. (Pl. VII. figs. 4.)

Zoarium incrusting, of a light brownish colour. *Zoœcia* quincuncial, disposed with great regularity, subquadrate (somewhat wider above than below), distinct, massive, of large size, depressed towards the base, rising towards the orifice, separated by a deep fissure, in which a delicate partition-line runs; surface thickly covered with large circular perforations; orifice ample, well arched above, constricted on each side, a little above the lower margin, which is straight, operculum apparently membranaceous, peristome not elevated; immediately below the orifice a tall central mucro with fluted surface, rising from an expanded base; behind it on the lower margin a small *avicularium* placed transversely, with pointed mandible; on one side of the orifice a very large avicularian cell (extending to the margin of the zoœcium) with punctured surface, a large semicircular mandible on the inner side looking towards the orifice; sometimes a second avicularian cell of similar structure but much smaller size on the other side of the orifice. *Oœcium* (?).

Loc. Malta (*Miss Jelly*).

There is a good deal of variability in the size of the lateral avicularia; but whenever two are present one is much larger than the other. Otherwise there is much constancy in the characters.

Lepralia lancifera, sp. n. (Pl. VII. figs. 6.)

Zoarium incrusting, sometimes of a very dark brown colour (almost black), sometimes lighter. *Zoœcia* disposed in lines, distinct, six-sided, surrounded by raised lines, front wall elevated, strongly calcified, covered with large perforations extending to the base of the suboral umbo, sometimes areolated, surface glossy; orifice rounded above (arch low), the lower margin straight, much wider than high, slightly contracted a short distance above the lower margin, peristome rising into a pointed elevation at the sides; immediately below the orifice a very prominent umbo carried out straight from the

cell-wall and projecting considerably, supporting an *avicularium* with a narrow lanceolate mandible, the beak slightly hooked at the extremity; on one side of the umbo a pointed and raised *avicularium*, directed obliquely downwards, sometimes a large number of such avicularia irregularly distributed. *Œcium* large, prominent, subglobose, well rounded above, narrowing towards the orifice, frequently a penthouse-like projection above the oral arch, surface punctured, a profusion of avicularia of various sizes on and around the oœcium.

Hab. Incrusting a *Cellepora* and spreading over *Flustra armata*, Busk.

Loc. Port Elizabeth, South Africa (*Miss Jelly*).

This species is assigned somewhat doubtfully to *Lepralia*. The structure of the orifice does not conform very markedly to that which is characteristic of this genus; but, on the whole, it is perhaps more nearly allied to it than to any other group.

The front wall of the zoœcia may be described as reticulate, so completely is it occupied by large perforations, with a narrow line separating them. The avicularia are present in great numbers and are all of the same type and furnished with lanceolate mandibles. In some parts of the colony, and especially in the neighbourhood of the oœcia, they literally swarm. Under these circumstances there is no regularity of arrangement; they are of all sizes and turned in all directions. In the older zoœcia the surface is sometimes much roughened, and large areolæ extend from the margin towards the centre. The true character of the cells is best studied in the younger portions of the colony, in which the suboral avicularium and perhaps one or two others form the whole contingent.

Mucronella, Hincks.

Mucronella aviculifera, sp. n. (Pl. VII. fig. 2.)

Zoarium incrusting. *Zoœcia* of large size, quincuncially disposed, broad-ovate, convex, separated by rather deep sutures, strongly calcified, the front wall thickly covered over its whole extent with round perforations, surface silvery white; orifice orbicular, the peristome slightly raised and forming a thick collar round it, a central bifid denticle within the lower margin and a small pointed denticle on each side, operculum membranaceous, finely furrowed from the top to the hinge-line, which crosses it just above the denticles; on the raised collar-like margin (immediately in front of the

bifid denticle) a central mucro, bearing on the top a minute *avicularium*, commonly two or three slender spinous processes below it on the cell-wall, also aviculiferous ; at the top of the cell on each side a rather stout, calcareous, cylindrical process, with a minute avicularium on the summit ; on one side of the orifice a very large raised avicularium, with spatulate mandible directed obliquely downwards. *Oœcium* wider than high, well rounded above, the sides slightly incurved and prolonged below alongside the oral arch, which is wide and shallow, the surface of a delicate silvery whiteness, covered with extremely minute risings, closely packed together.

Loc. Singapore or Philippines (*Miss Jelly*).

The most remarkable characteristic of this species is the profusion of the avicularia, and not only their profusion, but their peculiar character. With the exception of the large spatulate form, which occurs singly on a great proportion of the cells, they are all minute in size and mounted on the top of a calcareous column or erect spine-like process, and are present in extraordinary abundance.

EXPLANATION OF THE PLATES.

Plate VI.

Fig. 1. *Flustra spinuligera*, sp. n. *a.* Segment of the zoarium, nat. size. *b.* Abnormal zoœcium. *c.* Avicularium. *d.* Avicularium of *Flustra denticulata*, var. *inermis*, Busk *.

Fig. 2. *Schizoporella concinna*, sp. n. *a.* Orifice and lateral avicularia.

Fig. 3. *Schizoporella bimunita*, sp. n. *a.* Oœcial cells.

Fig. 4. *Schizoporella scabra*, sp. n.

Fig. 5. *Flustra nobilis*, sp. n. *a.* Avicularia. *b.* Zoœcium, showing the origin of the radical fibres at *a*.

Fig. 6. *Schizoporella pectinata*, Busk, form *Africana*, nov.

Plate VII.

Fig. 1. *Schizoporella spectabilis*, sp. n. *a.* Oœcium.

Fig. 2. *Mucronella aviculifera*, sp. n.

Fig. 3. *Schizoporella inconspicua*, sp. n.

Fig. 4. *Lepralia ocellata*, sp. n. *a.* Orifice.

Fig. 5. *Membranipora eburnea*, sp. n.

Fig. 6. *Lepralia lancifera*, sp. n. *a.* Group of zoœcia with oœcium. *b.* Oœcium, with penthouse-like projection in front.

---

* After the figure in the 'Challenger' Report, pl. xxxii. fig. 2 *c*.